

Chapter 12 - Biological Data Recording and Reporting

Introduction

This chapter describes the methods used to report biological data to the SWQMIS database. Prior to sample collection or any monitoring of biological data can proceed, an approved Quality Assurance Project Plan (QAPP) or Quality Assurance Plan (QAP) must include specific details about scheduled biological monitoring. Biological data recording and reporting requires a clear understanding of the SWQMIS Sample Event and Sample Set structure. The structure is a one-to-many relationship with one SWQMIS Sample Event (the entire biological monitoring instance) containing multiple SWQMIS Sample Sets. Each SWQMIS Sample Set represents an individual biological sampling category such as nekton-summary and metadata, nekton-seining, or nekton-electrofishing, to name a few. For partner or contractor provided data, each sample set is represented by one Tag ID. Reporting biological monitoring data also requires attaching Binary Large Object (BLOB) files to the SWQMIS Sample Events and/or Sample Sets. This chapter focuses on the requirements specific to biological data collection and reporting to the TCEQ.

Biological Data Specifics – All Providers

Parameter code 89888 represents all biological data for both reporting and retrieving data from SWQMIS. All biological data must be reported with parameter code 89888 in each SWQMIS Sample Set/Tag ID. Each SWQMIS Sample Set /Tag ID represents a single sampling category. TCEQ staff report their biological data via manual data entry into SWQMIS and select the data type and sampling category on the sample set metadata screen. Partners and contracted monitoring entities report their biological data via flat files that include values for parameter code 89888. The system will determine the data entry type and sampling category for each Tag ID based on the values reported for parameter code 89888. The user that queries specific biological data from SWQMIS in a report will be able to perform that query using parameter code 89888 with the sampling category value assigned to 89888. Alternatively, the user will be able to query SWQMIS for biological data based on the sampling category name. Therefore, it is crucial that data either loaded through the manual data entry method or through flat files include parameter code 89888 and the specific value for the sampling category. Chapter 6 of the DMRG references Commonly Reported Parameter Codes for biological data and includes the assigned values for each sampling category. The same chapter also provides information about reporting biological data sampling categories as composite samples and provides the parameter code(s) for which the composite information is based. Data providers usually report biological data as composite samples with the composite category as 'B' for both time and space, and composite type as 'CN' for continuous.

Data providers must record and report biological data in a specific manner. For a biological sampling event to be scheduled there must be discussion between the TCEQ project manager and the outside agency or contractor. The discussion must include identification of the types of biological data to be collected, and a QAP developed and approved that details the data types, sampling categories, and parameters to be reported. Careful attention must be given to the reporting of each data type or sampling category, and the list of parameters expected for each data type and sampling category (see Chapter 6 for the Commonly Reported Parameter Codes and the specific value to report for parameter code 89888 for each sampling category). Biological data must be reported by the end of the fiscal year following the year it was

collected, or as specified in the data provider's contract.

BLOB files are files that may be reported with the biological data. These include site maps, the Stream Physical Characteristics Worksheet with the transect data, fish voucher photos, or other biological data related images. BLOB files must be named in a format that includes the station ID, water body name, and sample end date. BLOB files can be attached at the sample event and sample set levels in SWQMIS by authorized TCEQ staff. Guidance in the SWQMIS User's Guide details how the BLOB files are to be attached in SWQMIS. There are limitations to the attachments. The maximum size for each attachment is 4MB and a maximum of 5 attachments can be added to each sample event. BLOB files can be zipped before uploading, but the size limitations of the zipped folder are the same as unzipped files. The maximum allowed length of the attachment description is 250 characters. The attachment description is a required field. Although the window for the description displays approximately 20 characters, once the sample set is saved with the entered description and the 'download' attachment button is selected, the system takes the user to a new screen where all the attachments are displayed. On this screen, the attachment descriptions and file names will be displayed in entirety allowing the user to distinguish between the attachments and select only the desired file to download.

TCEQ data validators typically expect four BLOB file types for each SWQMIS Sample Event for biological data. These include: a map of the area where biological data collection has occurred; voucher photos (see SWQM Procedures Manual, Volume 2 for guidance on vouchering) that applied to the entire SWQMIS Sample Event; the Stream Physical Characteristics Worksheet with the transect data; the Aquatic Life Use Monitoring checklist; and any other additional file as discussed between the collector and the TCEQ project manager. For individual SWQMIS Sample Sets/Tag ID there can be more than one attachment. All photographs for one SWQMIS Sample Set/Tag ID should be combined into one document that includes descriptive information for each individual photograph (preferably a pdf, but a Word document, or Power Point file will suffice). Electronic data provided by partner or contract entities should include a README.txt file that includes a list of each BLOB file, a description for each BLOB file, and a designated place for the BLOB file to be attached (either the SWQMIS Sample Event ID, or specific Tag ID).

TCEQ Regional and Central Office Staff

The TCEQ staff that are authorized to enter biological data into the database use the data entry screens in the Sampling Module of the SWQMIS database. DM&A staff validate the biological data entered into SWQMIS by TCEQ staff. Regional staff are required to create sample events and sets, and report biological parametric data electronically to the DM&A Data Manager via SWQMIS within the fiscal year following the year that the data were collected. When TCEQ staff enter and publish data, SWQMIS assigns the data the status of pre-production data management (PREDM). Chapter 8 of the SWQMIS User's Guide provides guidance for entry of sample data into SWQMIS by TCEQ staff. TCEQ staff should attach their BLOB files during manual data entry.

Laboratory Information Management System (LIMS)

If biological monitoring includes the collection of a sample by TCEQ Regional or Central Office staff using Request for Analysis (RFA) forms, then the collector must create a sample set in the biological sample event for the lab data (one sample set per RFA). The laboratory then reports these data to DM&A, and they are loaded into the database.

TCEQ Planning Agencies and Contractors

Biological Data Contractor Deliverables

There are no differences in the format for the biological data flat files and the routine surface water quality monitoring data flat files that are delivered by a TCEQ planning agency or contractor (see Chapter 7 for the flat file format). However, the events file does need to have one Tag ID per biological sampling category. Chapter 6 of the DMRG references biological data sampling categories and indicates if the sample event is to be reported as a grab or composite sample. Guidance is also provided about the parameter code(s) for which the composite information is based on. The SWQM Procedures Manual Vol. 2 provides guidance about how the biological data is to be reported to the TCEQ with regard to providing a hard copy and an electronic copy. The electronic copy should consist of the ASCII pipe delimited flat files, plus any additional files specified by the project manager or contract. BLOB files would be included as additional files. The additional files will be loaded as attachments to the electronic data in SWQMIS at the SWQMIS Sample Event and Sample Set levels.

The partner or contractor-collected data is provided to the TCEQ following a test upload by the partner or contractor into the UAT environment of SWQMIS. If the test upload is successful, the data deliverable will then be provided to the TCEQ Project Manager. The partner or contractor should include a README.txt file in the electronic data deliverable. This file should list each BLOB file and indicate to which SWQMIS Sample Event or Sample Set the BLOB file is to be attached. This will facilitate the TCEQ staff attaching BLOB files to the correct SWQMIS Sample Event or Sample Set in the Production environment of SWQMIS.

Event File Structure

The generic structure of the Sample/Event file:

Tag|Station Id|End Date|End Time|End Depth|Start Date|Start Time|Start
Depth|Category|Type|Comment|Submitting Entity|Collecting Entity|Monitoring Type

Results File Structure

The Results file may have one or multiple records for each event record. Each record consists of the nine fields described below; fields may or may not contain data depending on whether or not they are required fields. Fields must be in the order listed in the table below. If a field value is not appropriate for all result records, the blank field must still be present in the Results file. These fields must contain only numeric or alpha characters, as designated in field descriptions. No punctuation (such as quotation marks, commas, periods, etc.) can be accepted.

The generic structure of the Results file:

Tag|End Date|Parameter|GT/LT|Value|LOD|LOQ|Qualifier Code|Verify Flag

Note: some parameters will be reported in more than one sample set/Tag ID, such as Ecoregion Level III (parameter code 89961). Make sure to include parameter 89888 for all biological reporting.